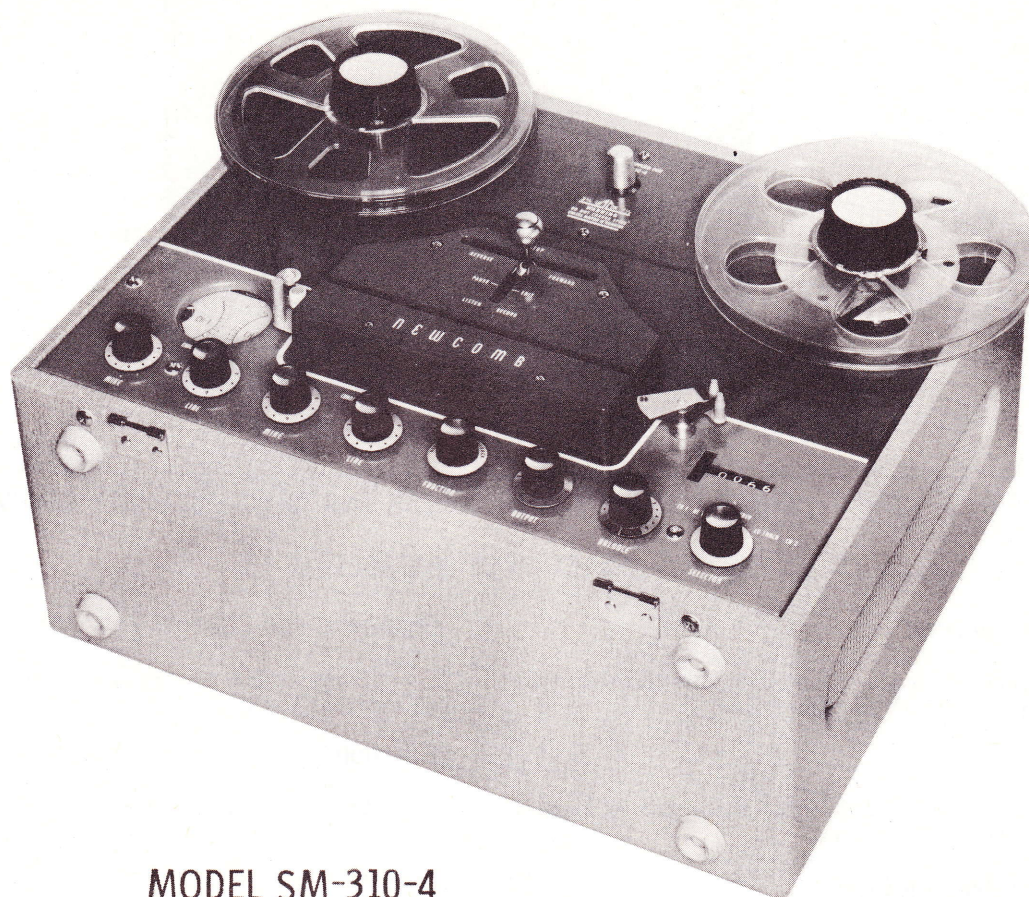


NEWCOMB MODELS
SM-310, SM-310-4



MODEL SM-310-4

GENERAL INFORMATION

The Newcomb Models SM-310 and SM-310-4 tape recorders are mechanically alike. The play-record and erase heads and the amplifier are slightly different.

Any size reel from 3" to 10 1/2" with either the small center hole or the large center hole may be used.

The different modes of operation are controlled by one lever.

Power to the motor is automatically turned off when all of the tape is wound onto the take-up reel.

The tape speeds are 3 3/4 and 7 1/2 ips.

These recorders contain the power supply and preamplifiers only. External amplifiers and speaker systems must be connected to the output jacks to play back a recording.

The power source required for this unit is 110 - 117 volts, 60 cycle AC.

Manufactured By:

Newcomb Audio Products Co.
6824 Lexington Avenue
Hollywood 38, California

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement CQ561

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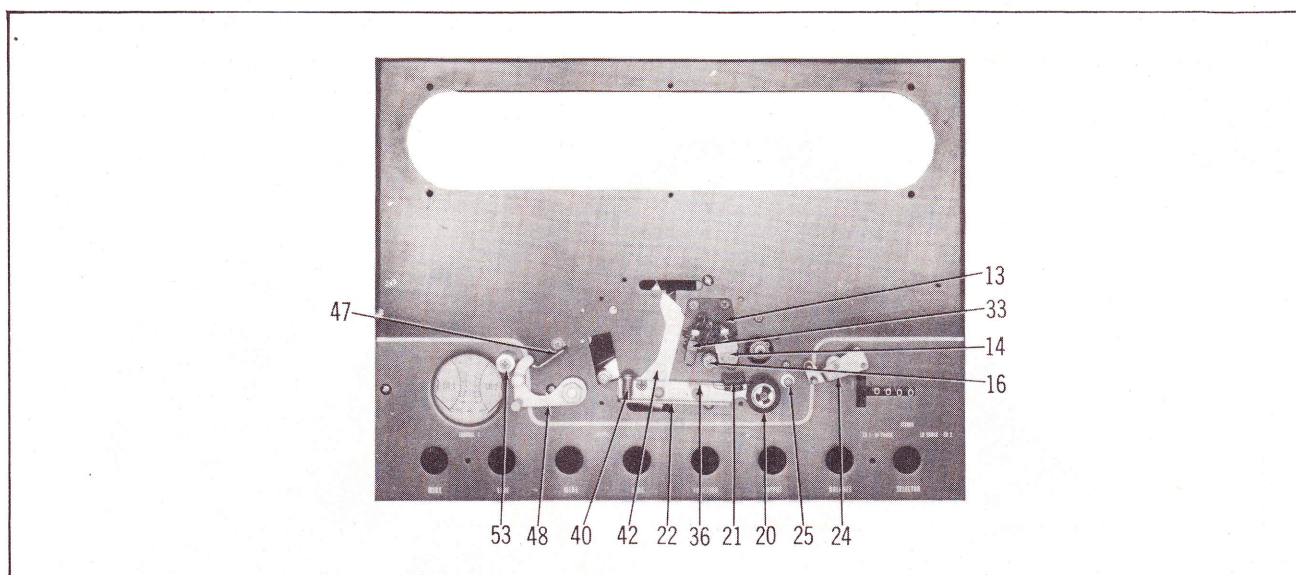


FIG. 1 TOP VIEW OF MECHANISM WITH COVERS AND DRIVE ASSEMBLY REMOVED

FUNCTION OF CONTROLS

Tape Control Lever

Selects the mode of operation when placed in the marked positions on the head cover.

Speed

Depress this button while the motor is running to select the correct speed.

Left-Hand Take-up Guide

The take-up guide is connected to the automatic motor switch and holds the switch closed when tape is threaded on the recorder. When no tape is on the recorder, the take-up guide is pulled forward by spring tension and opens the automatic motor switch.

Channel 1 and Channel 2 – Mike

Controls the record level when recording from a microphone.

Channel 1 and Channel 2 – Line

Controls the record level when recording from an external source.

Function

Selects either the record or playback mode of operation.

Output

Turns the power on to the recorder and regulates the output volume.

Balance

Balances the two channels when playing stereo.

Selector

Selects the channel or channels for recording or playback.

FUNCTIONS OF JACKS

Mike 1

Connect microphone to this jack for Channel 1 recordings.

Channel 1 Input

Connect an external recording source for Channel 1 recording.

Channel 1 Output

For connecting an external amplifier for playback.

Monitor

For connecting headphones to monitor a recording.

Channel 2 Input

For connecting an external source to make a recording on Channel 2.

Channel 2 Output

For connecting an external amplifier for playback.

Mike 2

For making recordings on Channel 2.

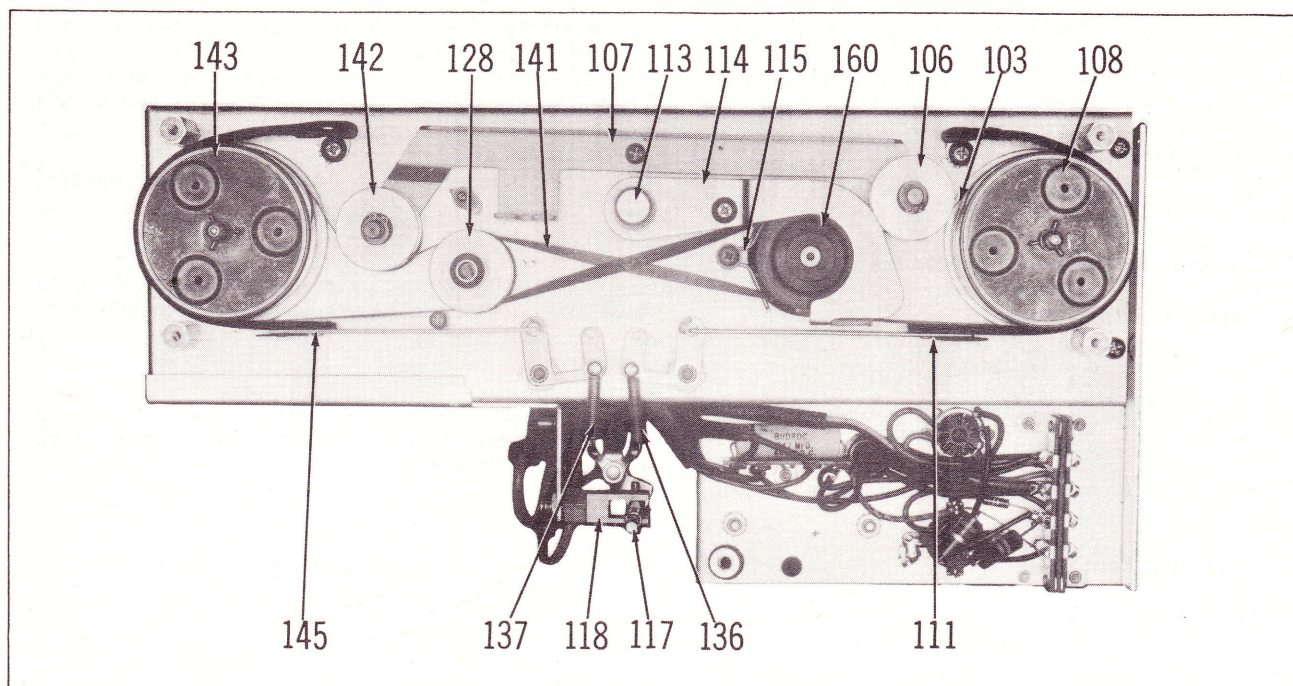


FIG. 2 TOP VIEW OF DRIVE ASSEMBLY

OPERATING INSTRUCTIONS

Threading the Tape

1. Remove the knobs (1) and adapter plates (2) from the supply and take-up spindles.
2. Place control lever (120) in Stop position.
3. Pull the left hand take-up guide back until it is latched.
4. Rotate the right take-up guide clockwise.
5. Place a reel of tape on the supply spindle and an empty reel on the take-up spindle.
6. Unwind approximately 2 feet of tape and thread it in back of the left tape guide, through the tape slot, and between the two posts on the right take-up guide.
7. Insert free end of tape into one of the slots in the take-up reel and turn reel a few turns counter-clockwise to secure tape to reel and remove all slack between reels.
8. Replace knobs (1) on the supply and take-up spindles.

NOTE: If large center hole reels are used, place the adapter plates on the spindles so the three pins correspond to the three holes in the spindle skirt.

Recording - Channel 1

1. Thread the tape.
2. Plug the microphone into Mike 1 jack for line recordings. If recording from an external source, such as a radio, phono, TV, or another recorder, connect it to the Channel 1 input jack.

3. Turn Selector switch to CH 1-Hi Track.

4. Turn Function switch to Record and hold until the Control Lever is moved to the record position.

NOTE: To record on Channel 2, use the same procedure but use the Channel 2 Mike or Line controls, turn selector to Lo Track-CH -2, and make connections to Mike 2 or Channel 2 input.

Stereophonic Recording

1. Thread the tape.
2. Plug the microphones into Mike 1 and Mike 2 jacks for live recordings. If recording from an external source, such as a stereo phono, or another stereo recorder, connect Channel 1 output to the recorder Channel 1 input, and Channel 2 output to the recorder Channel 2 input.
3. Turn selector switch to Stereo.
4. Turn Function switch to Record, and hold until the Control Lever is moved to the record position.
5. Adjust the Mike controls or Line controls so the average meter readings are -3 to -5.

Playback - Monaural

1. Thread the tape.
2. Connect an external amplifier to the output jack of the channel being used.
3. Turn Selector to the corresponding channel.

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4. Pull Control Lever to Listen.
5. Adjust the Output control to the desired listening level.

Playback — Stereo

1. Thread the tape.
2. Connect external amplifiers to the output jacks.
3. Turn Selector to Stereo.
4. Pull Control Lever to Listen.
5. Adjust the Output control to the desired listening level.
6. Adjust the Balance control so the output of each channel is equal.

Dual-Track Recording

When all the tape has been wound onto the take-up spindle, remove the full reel; turn it over and place it on the supply spindle. Place the empty reel on the take-up spindle, rethread the tape, and proceed with the recording. The first track can be played back without rewinding.

Quarter-Track Recording

Turn the Selector to CH 1 Hi Track. Thread the tape on the recorder. When the first track is recorded remove the full reel from the take-up spindle, turn it over and place on the supply spindle. Rethread the tape and record the second track. After the second track is recorded, turn the Selector to Lo-Track - CH 2. Remove the full reel of tape, turn it over and

place on the supply spindle. Rethread the tape and record the third track. After the third track is recorded, remove the full reel, turn it over and place on the supply spindle. Rethread the tape and record the fourth track.

The tape can be played back in the same manner.

Reverse

When the Control Lever is moved to the Reverse position, the tape will be rewound onto the supply reel.

Forward

Portions of program material may be skipped over to a desired spot when the Control Lever is moved to the Forward position.

Listen

To play back a recording, move the Control Lever to Listen.

Record

To set the tape in motion for recording, move the Control Lever to Record.

Erasing

A recording is automatically erased while a new one is being made. To erase a tape without putting a new recording on it, unplug all input connections, turn all controls to their lowest level, turn the Function switch to record and hold until the Control Lever is pulled into Record position. The tape will now run by the erase head and any material on the tape will be erased.

DISASSEMBLY

To Remove Recorder from Cabinet

1. Remove two screws from the front and back of cabinet and lift recorder out.

To Remove Tape Transport and Power Supply

1. Remove the spindle plates (3).
2. Remove the knob (31) from toggle section (117).
3. Remove head covers (8) and (9) and belt access cover (6).
4. Lift push-pull rod (98) out of the slot in the idler carriage (107).
5. Unplug the equalizer plugs from the amplifier.
6. Unhook the supply drag brake cord.
7. Unhook the motor switch cord.
8. Unhook spring from take-up tensioner (24).
9. Remove flywheel drive belt (71) from motor pulley (160).
10. Remove counter drive belt (65).

11. Remove the screw holding the tape transport and power supply to the amplifier.
12. Remove four screws from the top assembly.
13. Remove the hex nut and lockwasher holding the power supply chassis to the lower flywheel mounting plate.
14. Slide the transport back and unplug the amplifier power plug.
15. Lift the transport and power supply from the top assembly and amplifier.

To Remove Amplifier

1. Remove control knobs.
2. Remove monitor switch from top assembly.
3. Remove four screws from amplifier shield and remove shield.
4. Unsolder head leads.
5. Unplug meters.
6. Remove two screws from top assembly and then lift amplifier from top assembly.

ADJUSTMENTS

Record-Playback Head Azimuth

1. Thread a standard test tape on the recorder.
2. Connect an output meter to the output of the recorder.
3. While playing back the 10,000 cycle tone, adjust the Phillips head screw at the rear of the head mount until peak output is obtained.
4. Check the output of the second channel. If the output varies too much between channels, adjust to give best results on both channels.

Belt Flipper (114)

If the belt flipper (114) is too low, loosen the set screw and raise it so it will not rub the capstan drive belt (71). If too high, lower so the lift-off finger on belt flipper will not rub belt.

Cut-Off Switch

1. Place the recorder in a vertical position.
2. Loosen the thumb nut on motor capacitor assembly.
3. Place the retractor post on cut-off arm (48) so it is one-eighth of an inch from the head cover (8).
4. Tighten thumb nut.
5. With the recorder in the Play position and recorder setting in a vertical position, the pressure of the tape contactor against the tape should be enough to support the weight of a one cent piece resting on the retractor post.
6. Make sure the cut-off arm shaft assembly has .005" end play in its bushing.

Spindles

1. To align the spindles in the sides to side direction, loosen or tighten the two screws at the bottom, toward the center of the deck.
2. Place a 10 1/2" reel on each spindle.
3. Adjust the top screw until the reel runs free of both flanges. This adjustment is for top to bottom plane.

Stopping Brakes

1. Loosen the screw through the slotted hole in the anchor bracket (165) and move the anchor bracket for the initial adjustment.
2. Bend the brake adjuster tab on brake band assembly (145 or 111) with a pair of pliers, to cause the brakes to come on sooner or vice-versa. Care must be taken to insure both brakes are adjusted equally.

Take-Up Tensioner (24)

1. Leave .005" end play between the eccentric (81)

and bearing (83).

2. Position the take-up tensioner (24) so it will be at a 30 degree angle with respect to the tape deck.

Supply Drag Brake

1. Adjust the drag pulley bracket (154) so the tension spring (152) will be stretched approximately 5/32" when in the play position.

Take-Up Torque

1. Place a 7" reel on the take-up spindle.
2. Place the recorder in a vertical position.
3. Fasten a 1-1/2 ounce weight, such as a tire balancing weight, to the outer edge of the reel.
4. Place the Tape Control lever in the Play position.
5. If the take-up torque, which should be 4 to 6 ounces, does not balance out the effect of the weight, slide the metal clip on the idler carriage (107) closer to the take-up spindle to increase the spring tension.

Rewind Torque

1. Place a 7" reel on the supply spindle.
2. Place the recorder in a vertical position.
3. Fasten a 4-ounce weight, such as a tire balancing weight, to the outer edge of the reel 90 degrees from the vertical axis. The weight will exert a downward force of 13-inch-ounces. The rewind torque should be 12 to 13 inch-ounces.

Record Switch Latch

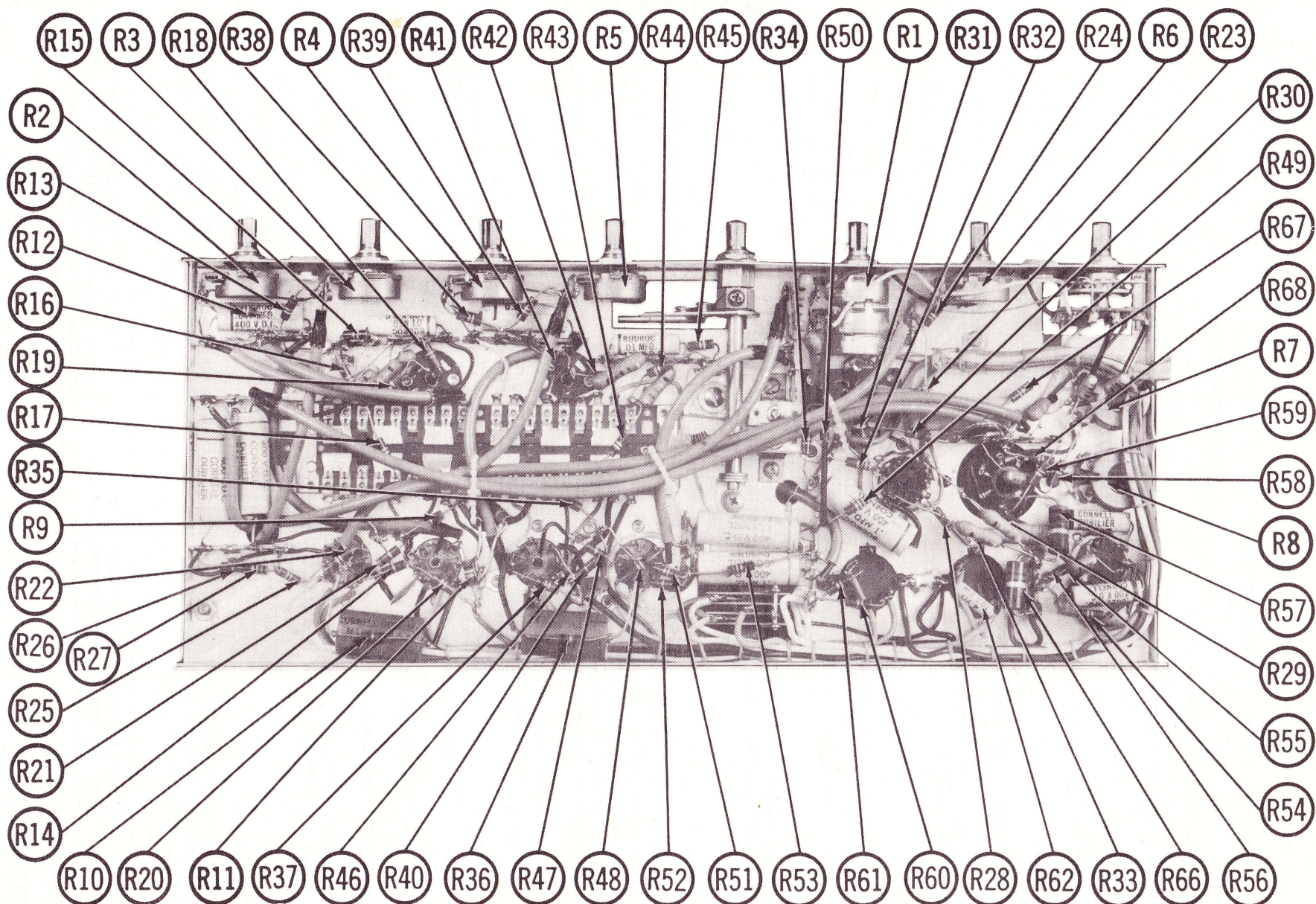
If the pressure arm (22) does not latch properly with the switch, bend the end of the pressure arm past the notch until they latch properly.

Pressure Roller

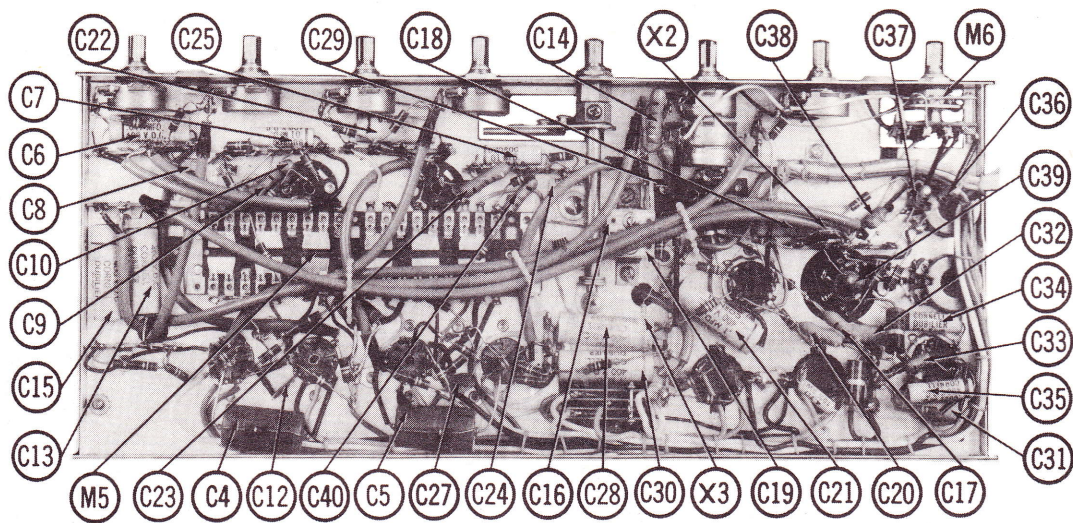
1. Place a loaded 7" reel on the supply spindle.
2. Place the recorder in a vertical position.
3. Fasten a 4-ounce weight, such as a tire balancing weight, to the inside edge of the reel.
4. Turn the power on and place the Tape Control lever in the Record position. The 4-ounce weight should balance out the capstan pull. If it does not, proceed as follows:
 - a. Loosen the lock screw on the pressure arm (22).
 - b. Turn the 6-32 Allen head set screw until the 4-ounce weight and capstan pull is balanced out. Make this adjustment with tape running through the recorder.
 - c. Retighten the lock screw.

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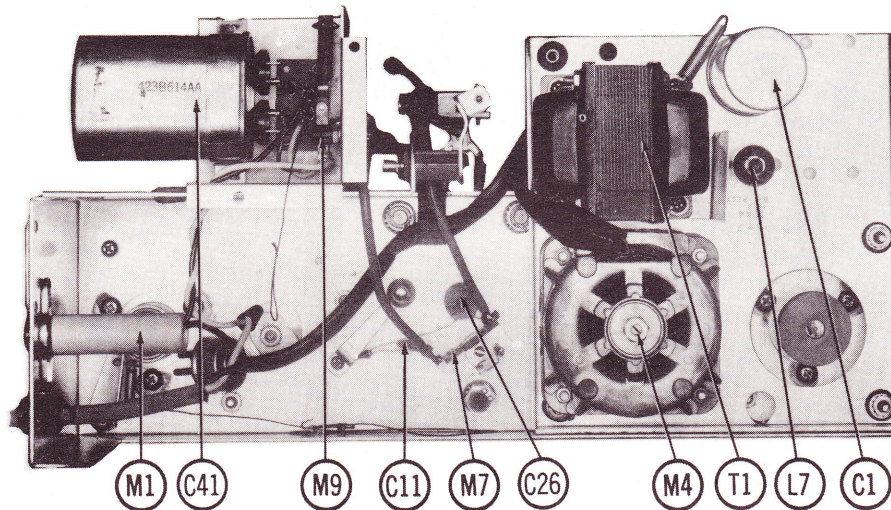


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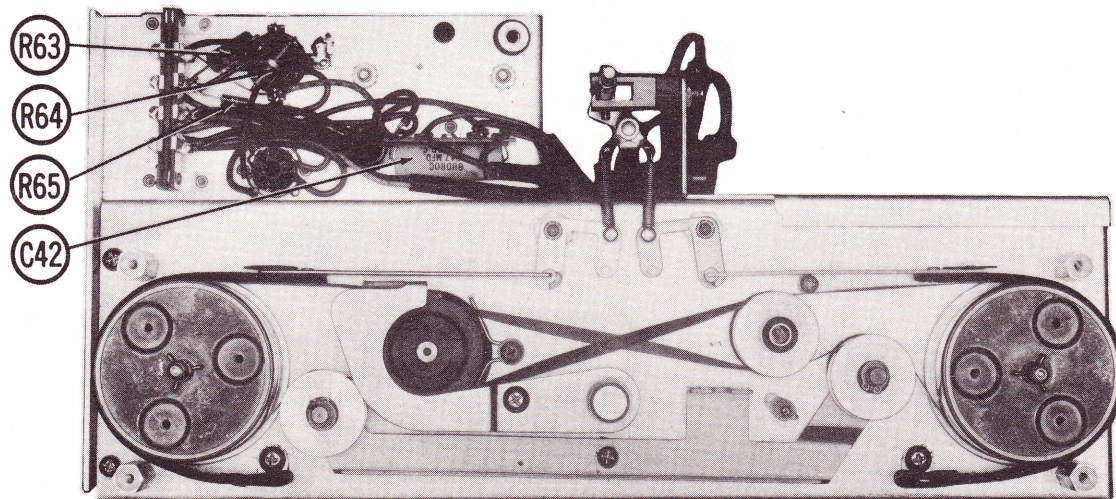


AMP CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.

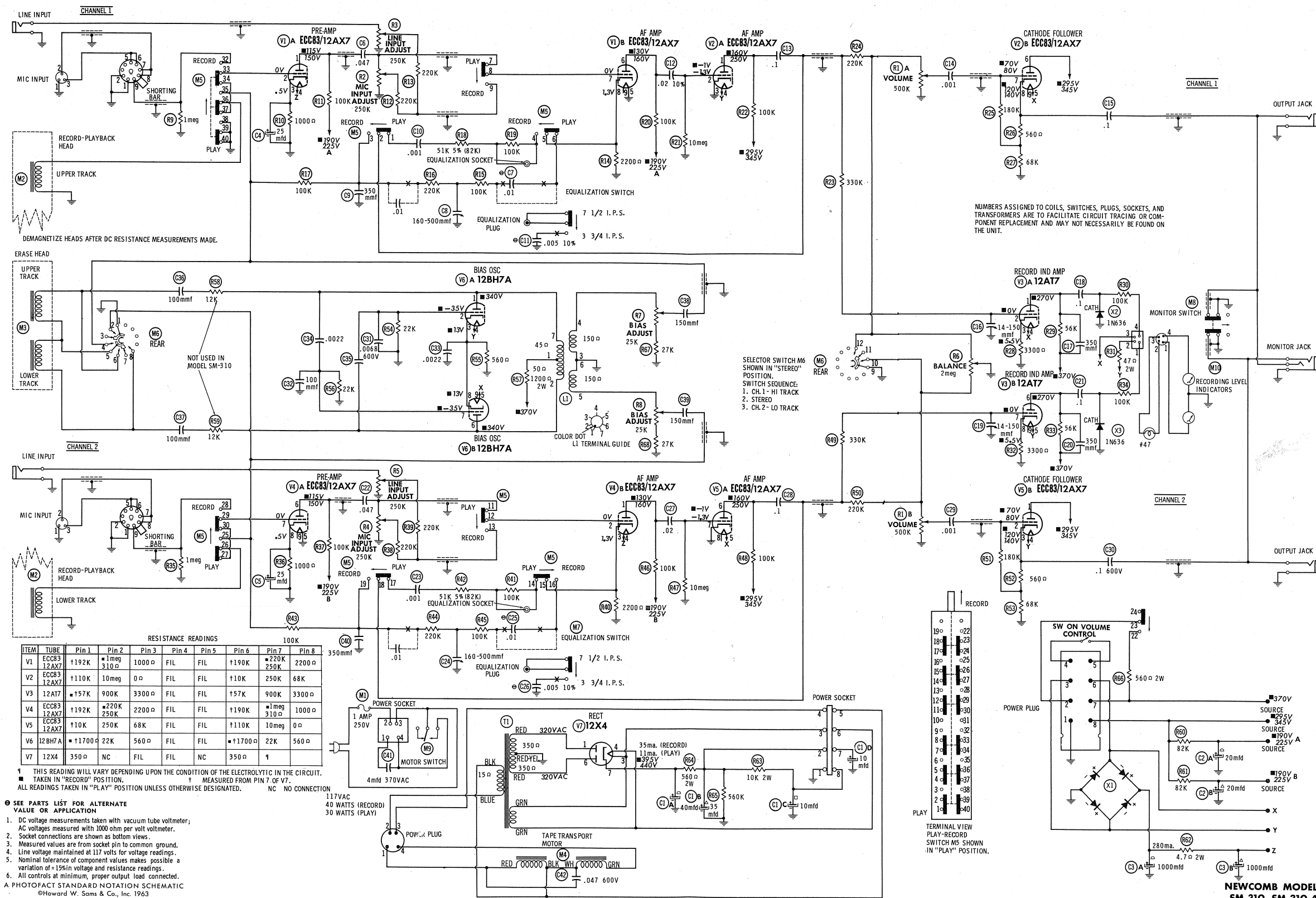
BOTTOM

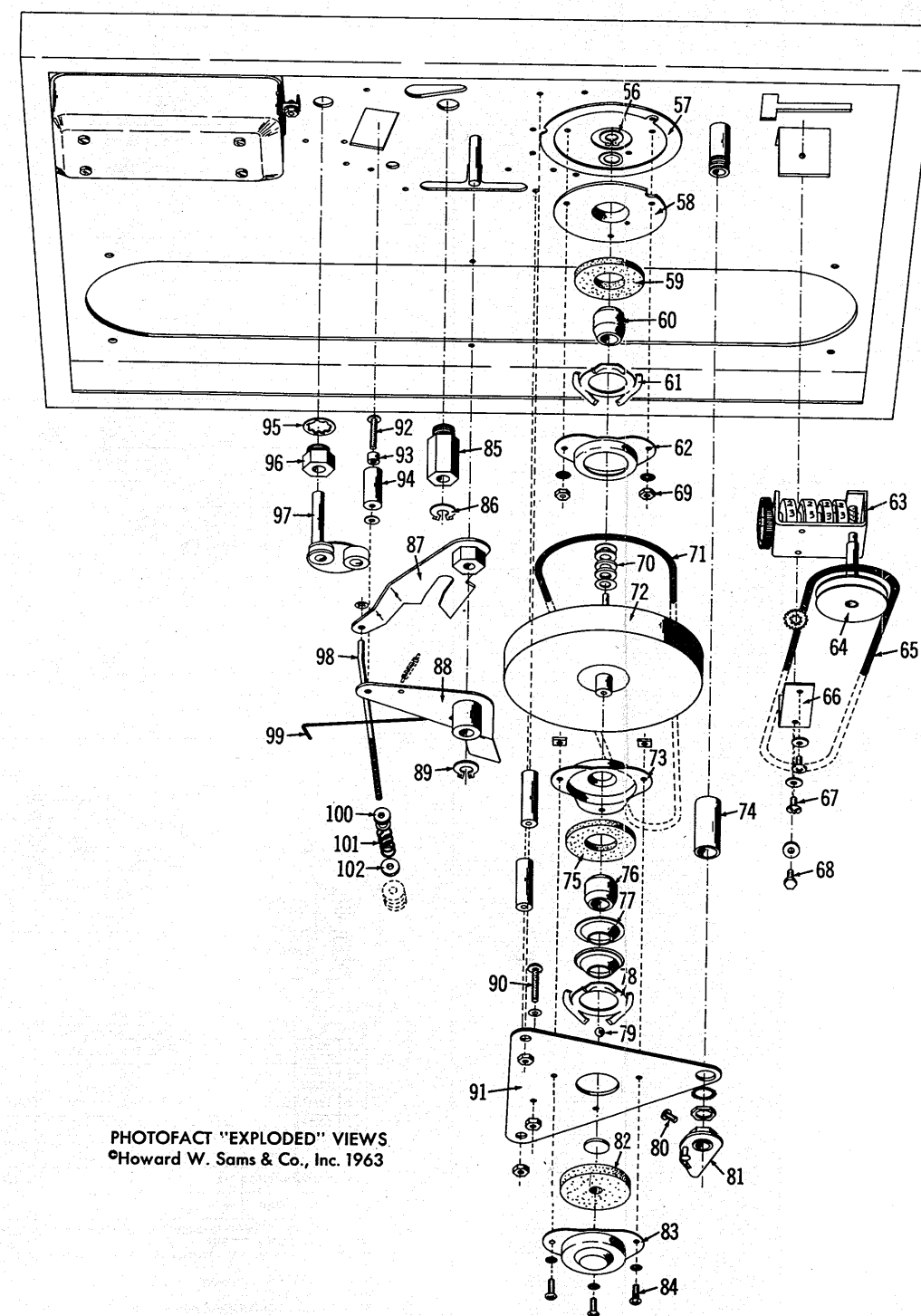
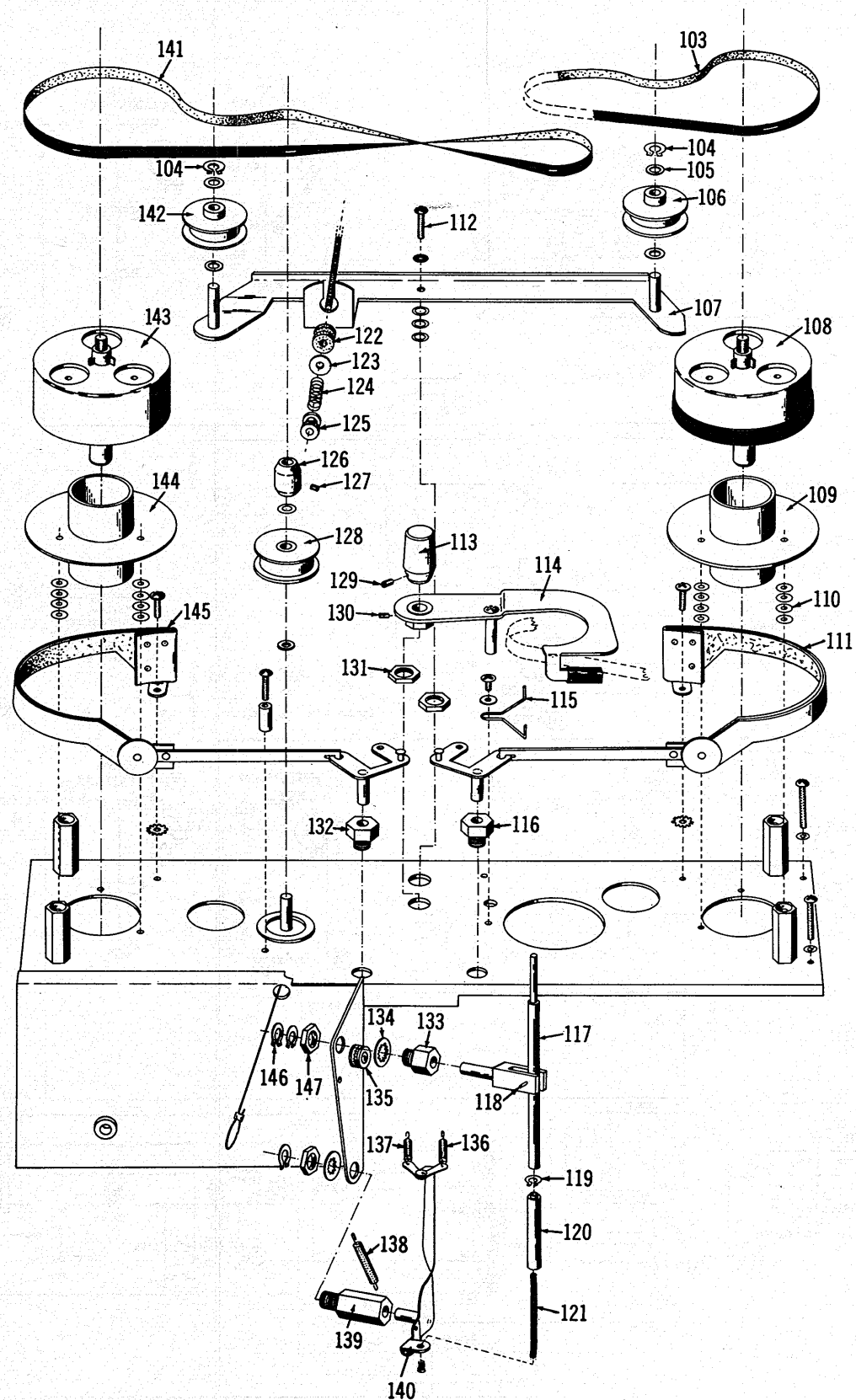
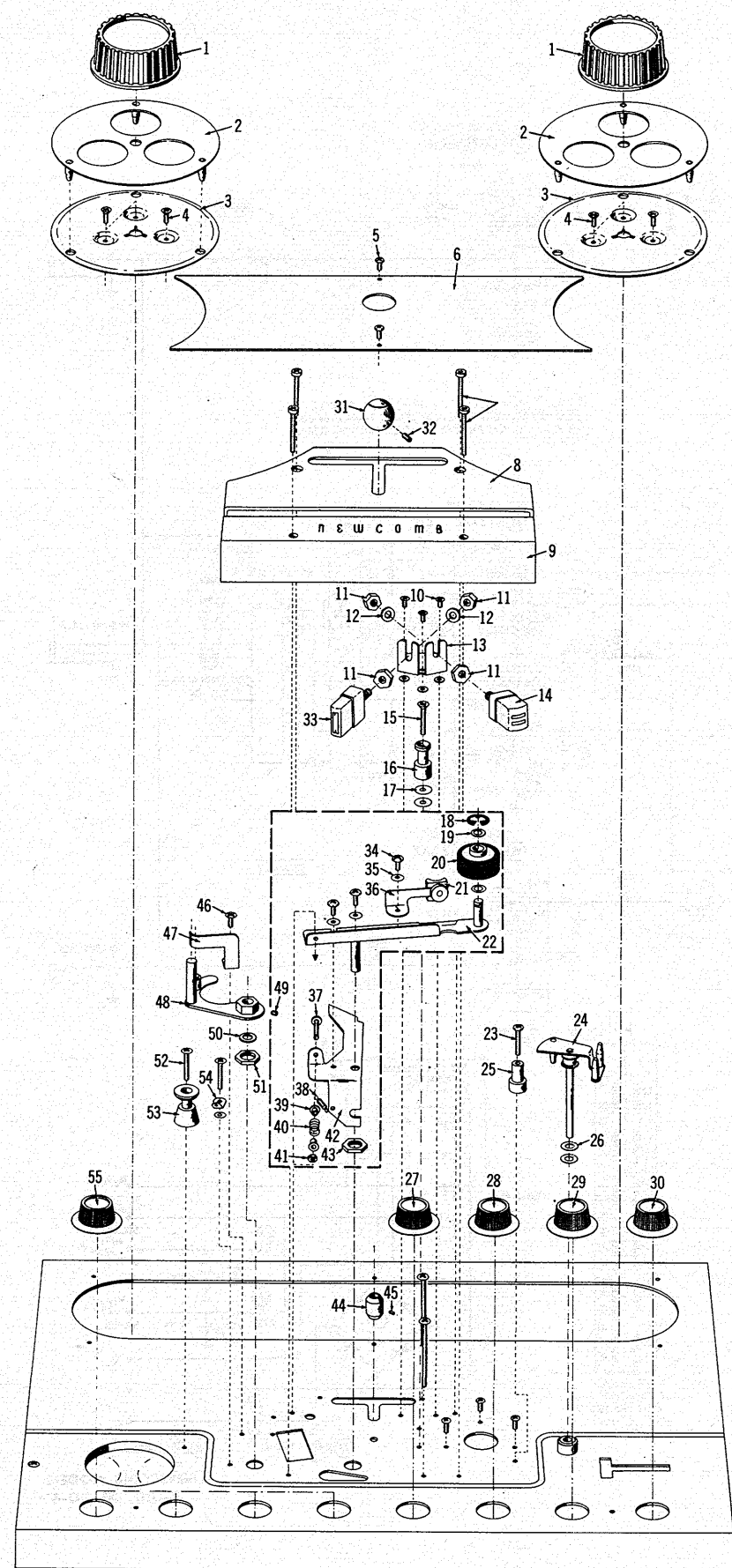


TOP



DRIVE MECHANISM





PHOTOFACT "EXPLODED" VIEWS
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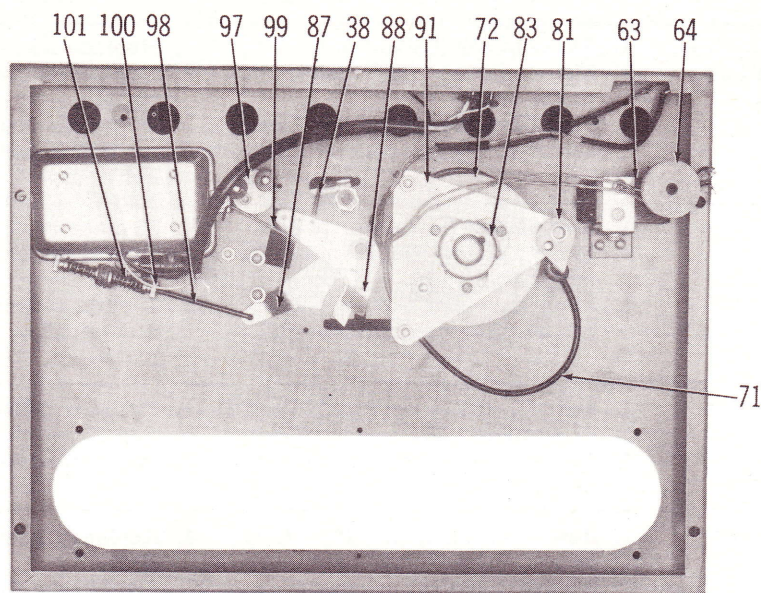


FIG. 3 BOTTOM VIEW OF MECHANISM WITH DRIVE ASSEMBLY REMOVED

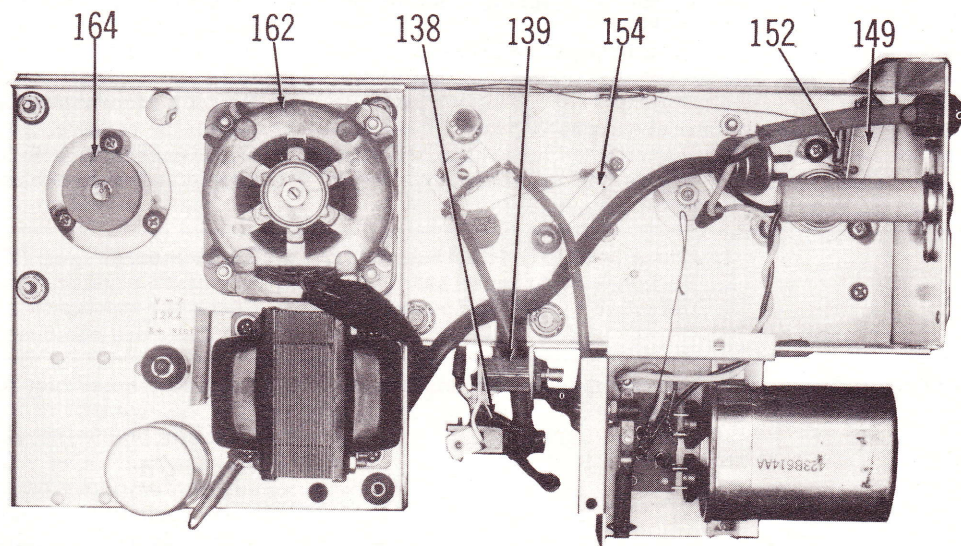


FIG. 4 BOTTOM VIEW OF DRIVE ASSEMBLY

CLEANING

Pressure roller (20), erase head (33), record-playback head (14), and tape guides (16) accumulate tape oxide as it passes these parts. Use a soft cloth and alcohol to remove it. After long periods of operation, a buildup of dirt and brake lining fuzz will accumulate on the brake drums. Use a cloth and alcohol to remove it.

LUBRICATION

The bearings are the self-lubricating type and

should not need lubrication for a long period of time under normal operating conditions. Need for lubrication will be evident by mechanical noise or slow operation. Use SAE30-type motor oil and lubricate as follows:

- Motor — 10 drops at each end.
- Belt idler pulleys — 1 drop each.
- Capstan — 10 drops at top and bottom.
- Counter — 1 drop on shaft at bearing.
- Pressure roller — 1 drop to shaft.

CAUTION: Do not overlubricate.

TROUBLE CHART

Symptom	Cause	Remedy
No take-up in Record, Play, or Fast Forward positions.	<ol style="list-style-type: none"> 1. Take-up belt (103) off or broken. 2. Motor pulley (160) loose on motor shaft. 3. Idler carriage (107) not being actuated by push-pull rod (98). 	<ol style="list-style-type: none"> 1. Replace take-up belt (103). 2. Reposition motor pulley (160) and tighten. 3. Push-pull rod (98) out of the slot of idler carriage (107). If so, replace.
No rewind.	<ol style="list-style-type: none"> 1. Rewind belt (141) off or broken. 2. Motor pulley (160) loose on motor shaft. 3. Idler carriage (107) not being actuated by push-pull rod (98). 	<ol style="list-style-type: none"> 1. Replace rewind belt (141). 2. Reposition motor pulley (160) and tighten. 3. If push-pull rod (98) is out of the slot of idler carriage (107), replace.
Take-up brake inoperative.	<ol style="list-style-type: none"> 1. Take-up brake spring (136) off or broken. 2. Take-up brake out of adjustment. 	<ol style="list-style-type: none"> 1. Replace take-up brake spring (136). 2. See "Brake Adjustment".
Rewind brake inoperative.	<ol style="list-style-type: none"> 1. Rewind brake spring (137) off or broken. 2. Rewind brake out of adjustment. 	<ol style="list-style-type: none"> 1. Replace rewind brake spring (137). 2. See "Brake Adjustment".
No capstan drive.	<ol style="list-style-type: none"> 1. Capstan drive belt (71) stretched or broken. 2. Motor (162) defective. 	<ol style="list-style-type: none"> 1. Replace drive belt (71). 2. Replace motor (162).
No drag on supply spindle.	<ol style="list-style-type: none"> 1. Drag brake (149) worn. 2. Drag brake spring (152) off or broken. 3. Drag brake cord broken. 	<ol style="list-style-type: none"> 1. Replace pad on drag brake (149). 2. Replace drag brake spring (152). 3. Replace cord.
No record or playback.	<ol style="list-style-type: none"> 1. Defective record-play head (14). 2. Broken wire to head. 3. Defective component in recorder preamp or associated amplifiers. 	<ol style="list-style-type: none"> 1. Replace record-play head (14). 2. Repair or replace. 3. Check per schematic and replace any defective component.
No erase.	<ol style="list-style-type: none"> 1. Erase head (33) defective. 2. Broken wire to erase head (33). 3. Defective circuit component. 	<ol style="list-style-type: none"> 1. Replace erase head (33). 2. Repair or replace. 3. Check per schematic and replace any defective component.
Counter inoperative.	<ol style="list-style-type: none"> 1. Counter belt (65) off, stretched, or broken. 2. Counter (63) binding. 	<ol style="list-style-type: none"> 1. Replace counter belt (65). 2. Check for binding between counter (63) and bottom of top plate. If so, loosen mounting screw and move counter (63) down. If nylon gear is damaged, replace counter (63).
Tape drags on reel flanges.	<ol style="list-style-type: none"> 1. Spindles (108) or (143) out of adjustment. 	<ol style="list-style-type: none"> 1. See "Spindle Adjustment".

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	KA-37-K	Knob, Reel Lock	6		Plate, Belt Access Cover
2	AM-19	Plate, Reel Adapter	7		Screws, Head Cover Retaining
3	SF-48	Plate, Spindle	8	MP-25-1	Casting, Head Cover-Upper
4		Screw, Reel Plate Retaining	9	MP-25-2	Casting, Head Cover, Lower
5		Screw, Belt Access Cover Plate	10		Screw, Head Bracket Mounting

MECHANICAL PARTS LIST (CONT'D.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
11		Hex Nut, Head Mounting	72	MP-24	Flywheel
12		Washer	73		Bearing Retainer
13	SF-167	Bracket, Head Mounting	74		Spacer
14	TH-6-R	1/4 Track Stereo Record Head-Model SM-310-4	75		Felt Washer, Oil Retaining
	TH-7-R	1/2 Track Record Head-Model SM-310	76		Lower Bearing
15		Screw, Tape Guide	77		Cup, Bearing
16	MP-76	Tape Guide	78	HA-117	Loading Spring, Flywheel
17		Washer	79	HA-118	Ball Thrust Bearing
18		"C" Retaining Ring	80		Set Screw
19		Washer	81	AM-15	Eccentric, Take-up
20	MP-74	Pressure Roller	82		Felt Washer, Oil Retaining
21	AM-22	Head Shield	83		Bearing Retainer
22	SF-165	Arm, Pressure Roller	84		Screw, Bearing Retainer
23		Screw, Tape Guide	85		Bushing, Threaded Brass 1" Long
24		Tensioner, Take-up	86		Grip Ring
25		Guide, Stripper	87		Cam, Belt Tensioning
26		Washer	88	AM-10	Cam, Tape Lifter
27	KA-35K-100	Knob, Record-Playback	89		Grip Ring
28	KA-35K-107	Knob, Output-Power-Off	90		Screw, Power Supply Mtg.
29	KA-35K-99	Knob, Balance	91	SF-65	Support Plate, Lower Flywheel
30	KA-35K-101	Knob, Selector	92		Screw, Lifter Mounting
31	MP-33	Knob, Toggle	93		Spacer
32		Set Screw	94		Lifter Guide
33	TH-5-R	1/4 Track Stereo Erase Head-Model SM-310-M	95	WA-104	Lockwasher
	TH-3-R	1/2 Track Erase Head-Model SM-310	96	MP-20	Bushing, Threaded Brass 5/16" Lg.
34		Screw	97	AM-9	Eccentric, Cutoff Arm
35		Washer	98	HA-120	Rod, Push-Pull
36		Spring, Pressure Pad	99		Link, Switch
37		Screw, Pressure Adjusting	100		Knurled Nut
38		Spring, Pressure Cam	101	HA-143	Spring, Compression
39		Shouldered Washer	102		Grommet
40		Compression Spring	103	BE-5	Belt, Take-up
41		Hex Nut	104		Grip Ring
42	SF-164	Cam, Pressure Roller	105		Washer
43		Hex Nut	106		Pressure Pulley, Take-up
44	MP-45	Weight, Toggle	107	SF-50	Carriage, Idler
45		Set Screw	108	MP-12	Spindle, Take-up
46		Screw, Cutoff Guide	109		Housing, Take-up Spindle
47	SF-172	Cutoff Gate	110		Washer, Spring
48		Cutoff Arm	111		Brake Band Assembly, Take-up
49		Set Screw	112		Screw, Idler Carriage
50		Washer	113	MP-34	Knob, Speed Change
51		Hex Nut	114	AM-16	Belt Flipper
52		Screw, Left Tape Guide	115		Belt Guide
53		Tape Guide, Left Hand	116		Bushing, Threaded Brass
54		Lug, Spade	117	MP-31-D	Toggle Section, Upper
55	KA-35K-102	Knob, Skirted "0-9"	118	MP-48	Yoke, Universal
56		Grip Ring	119		Grip Ring
57	WA-134	Gasket, Gray Fiber - 2 1/16" x 2 1/16" x .050"	120	MP-11	Toggle Section, Lower
58	SF-86	Bearing Retainer, Upper	121	HA-127	Spring, Toggle Centering
59		Felt Washer, Oil Retaining	122		Grommet
60		Upper Bearing	123		Washer
61	HA-117	Loading Spring, Flywheel	124	HA-143	Spring, Compression
62	SF-86-1	Bearing Retainer	125		Knurled Nut
63	CO-1	Counter	126		Retainer, Pulley
64	GA-31	Pulley, Counter - 5/32" ID	127		Set Screw
65	BE-6	Belt, Counter	128		Idler Pulley, Fixed
66		Bracket, Counter Mounting	129		Set Screw
67		Screw, Counter Mounting	130		Set Screw
68		Screw, Counter Mtg. Brkt.	131		Hex Nut
69		Hex Nut	132		Bushing, Brass Threaded
70		Washer	133		Bushing, Brass Threaded
71*	*BE-1	*Belt, Capstan Drive	134	WA-104	Lockwasher
			135	HA-96	Pulley, Plastic
			136	HA-90	Brake Spring, Take-up
			137	HA-90	Brake Spring, Rewind
			138	HA-131	Spring, Brake Actuator Return

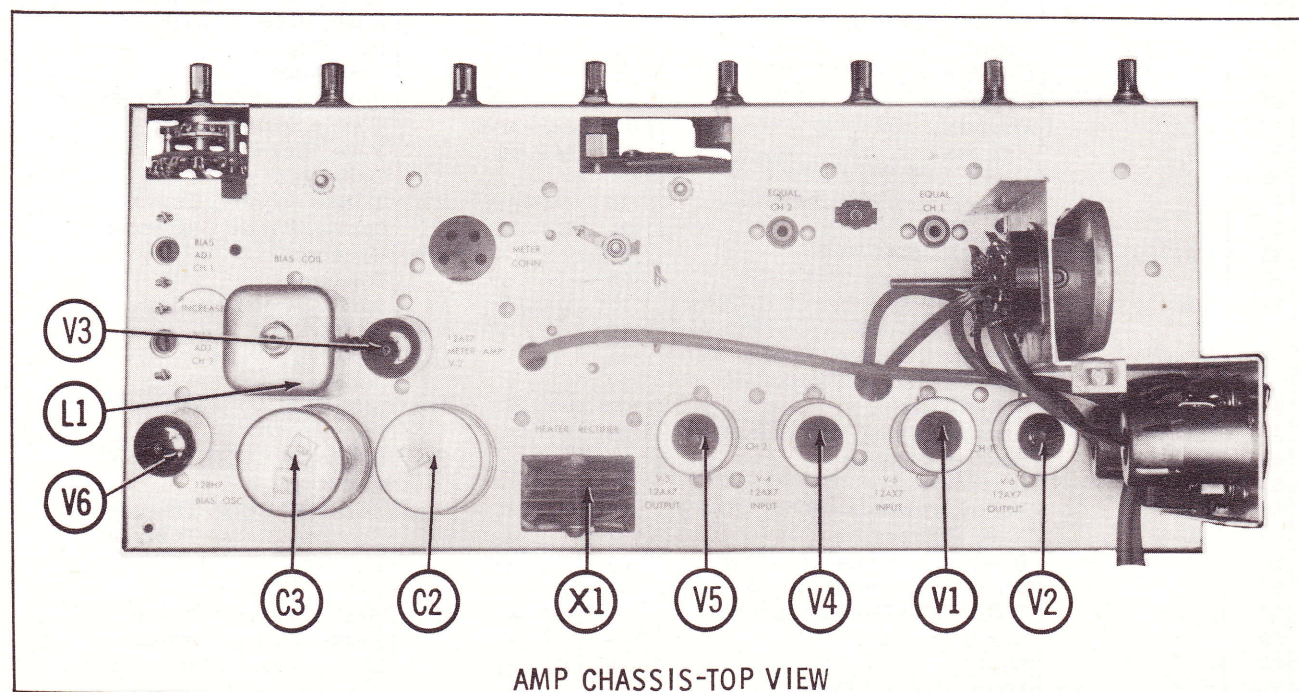
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MECHANICAL PARTS LIST (CONT'D)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
139	MP-36	Bushing, Threaded Brass 3/4" Long	152		Spring, Drag Brake
140		Pivot	153		Retaining Ring
141	BE-2	Belt, Rewind	154	AM-18	Bracket Ass'y., Drag Pulley
142		Tension Pulley, Rewind Belt	155		Bushing, Belt Flipper
143	AM-21	Spindle, Rewind	156		Grip Ring
144		Housing, Spindle	157		Sleeve, Motor Mounting
145	AM-24	Brake Band Ass'y. Supply	158	MP-46	Spacer, Motor Shock Mtg.
146		Grip Ring	159		Grommet, Motor Mounting
147		Hex Nut	160	MP-8-C	Pulley, Motor
148		Grip Ring	161		Set Screw
149	SF-150	Arm, Drag Brake	162	PM-22	Motor, Synchronous
150		Screws, Retaining, Adjusting	163		Retaining Ring
151		Washer	164	GA-30	Pulley, Counter
			165		Anchor Bracket, Brake Ass'y.

* Drive Belt, WALSCO Part No.1410-14



AMP CHASSIS-TOP VIEW

AMP PARTS AND DESCRIPTION

TUBES

◆ AMPEREX ◆			◆ GENERAL ELECTRIC ◆			◆ RCA ◆			◆ RAYTHEON ◆			◆ SYLVANIA ◆		
ITEM No.	USE		TYPE			ITEM No.	USE		TYPE					
V1	Preamp. -AF Amp.		ECC83/12AX7			V5	AF Amp. -Cath. Follower		ECC83/12AX7					
V2	AF Amp. -Cath. Follower		ECC83/12AX7			V6	Bias Osc.		12BH7A					
V3	Record Indicator Amp.		12AT7			V7	Rectifier		12X4					
V4	Preamp. -AF Amp.		ECC83/											

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES	NOTES
			RCA PART No.	SARKES TARZIAN PART No.		
X1	.280A	PV-8 ①	IN3193 ②	304 B ①		Filament Bridge Ch. 1 Meter (IN636) Ch. 2 Meter (IN636) ① Selenium ② Silicon, 4 Required
X2		TZ-4				
X3		TZ-4				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	.40	450	CE-46	AFH4-92	D0910	XC4-15	FP428	TMQ-4499
B	.35	350						
C	.30	350						
C2A	.20	450	CE-45	AFH2-69	B0400	XC2-15	FP282.5	
B	.20	450						
C	.20	450						
C3A	.1000	15	CE-50	AFH2-05-75	B0040	XC2-45	WP200	TMD-2020
B	.1000	15						
C	.1000	15						
C4	.25	50	CE-9	PRSI340	BR25-50	MT1-12	TC-36	TD-25-50
C5	.25	50	CE-9	PRSI340	BR25-50	MT1-12	TC-36	TD-25-50

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.047 400V	Note 1 #CV-2	P488N-047	DD-503	CUB4S47	4DP-3-473	GP150	4PS-S47
C7	.01 400V		P488N-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C8	160-500					304		
C9	.001	Note 1	SI 360	DD-351	L10T35	CCD-331	GP335	10TS-T35
C10	.005 10%		SI 1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C11	.02 10%		SI 5000	DD-502	L10D5	CCD-502	GP250	10TS-D50
C12	.01 400V	#CV-15	BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C13	.001		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C14	.01		SI 1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C15	.1 400V	#CV-15	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C16	14-150					424		
C17	.350		SI 360	DD-351	L10T35	CCD-331	GP335	10TS-T35
C18	.1 400V	#CV-15	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C19	14-150					424		
C20	.350		SI 360	DD-351	L10T35	CCD-331	GP335	10TS-T35
C21	.1 400V	#CV-2	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C22	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GP150	4PS-S47
C23	.001		SI 1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C24	160-500	Note 1				304		
C25	.01 400V		P488N-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	.005 10%		DI-5000	DD-502	L10D5	CCD-502	GP250	10TS-D50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C27	.02		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C28	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C29	.001		SI 1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C30	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4PS-P10
C31	.0068 600V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6PS-D68
C32	.0068 600V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6PS-D68
C33	100		SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C34	.0022 400V		P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6PS-D22
C35	.0022 400V		P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6PS-D22
C36	100		SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C37	100		SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C38	150		SI 150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C39	150		SI 150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C40	350		SI 350	DD-351	L10T35	CCD-351	GP335	10TS-T35
C41	4mfd 370VAC		RGO-962		KKT374		OP470	CR-46
C42	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GP150	6PS-S47

Newcomb Part Number.
Note 1. Not used in some versions.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume, 1	500K	RV-95-K	B-60, SR-60, KR-1 or (F2-500K, R2-500K, KR-1, SU204)	AD47-500K-Z, SWE-12, KSS-3		FB55A, RU55A, US41, SL3500
B	Volume, 2 On-Off	500K					
R2	Mic. Input Adj., 1	250K	RV-61-K	B-51, or (F2-250K, SU204)	A47-250K-Z, FSS-3	Q13-130, or (BU1, CF15, SSI, DC1)*	U-44, or (UA254L, SL3500)
R3	Line Input Adj., 1	250K	RV-61-K	B-51, or (F2-250K, SU204)	A47-250K-Z, FSS-3	Q13-130, or (BU1, CF15, SSI, DC1)*	U-44, or (UA254L, SL3500)
R4	Mic. Input Adj., 2	250K	RV-61-K	B-51, or (F2-250K, SU204)	A47-250K-Z, FSS-3	Q13-130, or (BU1, CF15, SSI, DC1)*	U-44, or (UA254L, SL3500)
R5	Line Input Adj., 2	250K	RV-61-K	B-51, or (F2-250K, SU204)	A47-250K-Z, FSS-3	Q13-130, or (BU1, CF15, SSI, DC1)*	U-44, or (UA254L, SL3500)
R6	Balance	2meg	RV-94-K	B-75, or (F1-2meg, SU204)	A47-2meg-S, KSS-3	Q11-139 or (BU1, CF19, SSI, DC1)*	U-56 or (UA26L, SL3500)
R7	Bias Adj., 1	25K	RV-93	TT-26		(BU1, CF11, SSI, DC1)*	U-29, SL37, SL3500
R8	Bias Adj., 2	25K	RV-93	TT-26		(BU1, CF11, SSI, DC1)*	U-29, SL37, SL3500

* "SNAPTROL"

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R9	1meg				R22	100K			
R10	1000Ω				R23	330K			
R11	100K				R24	220K			
R12	220K				R25	180K			
R13	220K				R26	560Ω			
R14	2200Ω				R27	68K			
R15	100K				R28	3300Ω			
R16	220K				R29	56K			
R17	100K				R30	100K			
R18	51K 5%				R31	47Ω 2W			
R19	100K				R32	3300Ω			
R20	100K				R33	56K			
R21	10meg				R34	100K			

SM-310, SM-310-4
NEWCOMB MODELS

AMP PARTS LIST AND DESCRIPTION (CONTINUED)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R35	1meg			(82K) †	R52	560Ω			
R36	1000Ω				R53	68K			
R37	100K				R54	22K			
R38	220K				R55	560Ω			
R39	220K				R56	22K			
R40	2200Ω				R57	1200Ω 2W			
R41	100K				R58	12K			
R42	51K 5%				R59	12K			
R43	100K				R60	82K			
R44	220K				R61	82K			
R45	100K				R62	4.7Ω 2W			
R46	100K				R63	10K 2W			
R47	10meg				R64	560Ω 2W			
R48	100K				R65	560K			
R49	330K				R66	560Ω 2W			
R50	220K				R67	27K			
R51	180K				R68	27K			

† Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		NEWCOMB PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	Bias Osc.	RC-31					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	NEWCOMB PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @.36A	640VCT @.035A	12.6V @1.5A	TR-208					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			NEWCOMB PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1A 250V	FA-4	FA-8	312001. (3AG 1A 250V)	342014	AGC1	HKP-CC

TAPE HEADS

ITEM NO.	MEASURED			NEWCOMB PART NO.	NORTRONICS PART NO.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M2	590MH	66 Volts	63KC	TH-6-R	1050	Quarter-Track Stereo R/P Head
M3	78MH	88 Volts	63KC	TH-5-R	1450	Quarter-Track Stereo Erase Head

MISCELLANEOUS

ITEM No.	PART NAME	NEWCOMB PART No.	NOTES
M4	Motor	PM-22	Play-Record (2-Position, Slide Type) Selector (Rotary Wafer Type) Equalization (DPDT, Spring Loaded Slide Type) Monitor (DPDT, Spring Loaded Slide Type) Motor (Micro Type)
M5	Switch	SY-96	
M6	Switch	SY-99	
M7	Switch	SY-97	
M8	Switch	SY-103	
M9	Switch	SY-100	
M10	Dual Meter Assembly	ME-6	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	MP-33	Toggle
Knob	MP-34	Speed
Knob	KA-37K	Reel Lock
Knob	KA-35K-99	Balance
Knob	KA-35K-100	Record-Playback
Knob	KA-35K-101	Selector
Knob	KA-35K-102	Mic., Line
Knob	KA-35K-107	Volume, Power On-Off
Case	CA-66	

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in 12 Colors
8524 (Stranded) Available in 12 Colors

Power Cord Use BELDEN No. 17106 (Plastic) or 17128 (Rubber) - 6 Ft.
17109 (Plastic) or 17129 (Rubber) - 9 Ft.

Power Cord (Interlock Type) Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)

Low-Loss Shielded Lead (Interconnecting) Use BELDEN No. 8401 or 8421

Phono Pick-up Arm Cable Use BELDEN No. 8430 (Two Conductor-Unshielded)
8429 (Two Conductor-Shielded)
8419 (Three Conductor-Shielded)